Calcium carbide (CaC2) exposure from fruit ripening process and health effects among fruit farmers: a research review

ABSTRACT

Background: The use of CaC2 in fruits ripening is common in some countries because it is readily available and can easily be purchased at very low prices. However, the health effects from its occupational exposure is rarely being documented. This paper provides a review on the potential health risks of CaC2 exposure among workers in fruit plantation.

Materials and Methods: Online manuscripts were sought from databases including the Science Direct, PubMed and Google Scholar. The main keywords used for the search were calcium carbide, chemical fruits ripening and phosphine exposure and health effects.

Result: Overall, a total of 9 articles on CaC2 and its health effects were selected. These articles were published in 1991 to 2013 and there were five studies from India, two studies from Bangladesh, one study from United Kingdom and one study from Germany. Study designs reported in those articles were experimental and non-experimental (general article, editorial, case study and case report). From the review, four articles focus on the health effects instigated by CaC2 whereas five articles emphasize on the effect of phosphine not only to pulmonary and cardiac system but also to cellular level.

Conclusion: In summary, findings from nine studies agreed that CaC2 and phosphine exposure were related to pulmonary symptoms. It is important to review the current handling of this chemical by farmers and this research is expected to improve the current application towards a safer method in effort to improve the quality of life of workers and also consumers.

Keyword: Calcium carbide health effect; Chemical fruits ripening; Phosphine exposure